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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,023

04/13/2004

Hiroaki Matsuyama

12922A

3378

23389

7590

09/27/2006

SCULLY SCOTT MURPHY & PRESSER, PC
400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER

NGUYEN, HOAN C

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/823,023	Applicant(s) MATSUYAMA, HIROAKI	
	Examiner HOAN C. NGUYEN	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,15,21,22,34-39 and 42-49 is/are pending in the application.
 4a) Of the above claim(s) 43,46,48 and 49 is/are withdrawn from consideration.
 5) ☒ Claim(s) 4,15,21 and 22 is/are allowed.
 6) ☐ Claim(s) 34-38, 42 and 44-45 is/are rejected.
 7) ☒ Claim(s) 7 and 39 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>foreign patent document</u> |

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to new claims 43-49 based on the Response filed on 7/20/2006 have been considered but are moot in view of the new ground(s) of rejection. Therefore, this is Final action.

In election filed on 6/08/2005, applicants elected Group A, subspecies b drawn to Fig. 3. However,

- new claims 43 and 46 cited the feature "the orientation layer and pixel electrode are concave shape", which is not shown in Fig. 3 that shows the orientation layer the pixel electrode being convex shape;
- new claims 48-49 cited the feature "the columnar spacer is normal to the device and has a diameter decreasing toward the counter-electrode opposing the pixel electrode", which is not shown in Fig. 3 that shows columnar spacer diameter increasing toward the counter-electrode opposing the pixel electrode.

Therefore, new claims 43, 46 and 48-49 are withdrawn from consideration.

Claims 4, 15, 21-22, 34-39, 42, 44-45 and 47 are pending in the elected species.

However, in last non-final action, claims 4, 15, 21 and 22 were allowed due to no prior art before Foreign Priority (August 28, 1998) with the English translation submitted in the parent case 09/384186 on 12/29/2003. In this amendment, new claim 47 contains the allowed subject matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al. (US6344883B2).

Yamada et al. teach (Fig. 32) a multi-domain alignment active-matrix liquid crystal display device comprising:

- first and second transparent plates 521-522 arranged to oppose each other;
- a liquid crystal being sandwiched between the first and second plates (col. 3 lines 31-33), and
- pixel electrodes 520 disposed on one of said plates and counterelectrodes 519 disposed on the other of said plates and adapted to apply voltage to the liquid crystal across the pixel electrodes and the counterelectrodes;

wherein

- an orientation layer 510 is provided at least on each pixel electrode disposed on one of said plates,
- at least one columnar spacer (band-shaped spacer 523, **claims 34 and 42 do not specified any particular shape of columnar spacer; besides any columnar spacer will divide the alignment into several domains**) is provided on said orientation layer between the two opposing plates for regulating a panel

gap between said plates, said at least one columnar spacer disposed approximately at a center of a pixel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6344883B2) as applied to claims 34 and 42 in view of Harada et al. (US5795629).

Yamada et al. fail to disclose forming the orientation layer has orientation controlled by oblique deposition of SiO to effect oblique orientation of the orientation layer.

Harada et al. teach forming the orientation layer has orientation controlled by oblique deposition of SiO to effect oblique orientation of the orientation layer for aligning in a pre-tilt angle, so that controlling a wide view angle (col. 1 lines 10-12, lines 30-36).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain alignment active-matrix liquid crystal display device as Yamada et al. disclosed with forming the orientation layer has orientation controlled by oblique deposition of SiO to effect oblique orientation.

Art Unit: 2871

of the orientation layer for aligning in a pre-tilt angle, so that controlling a wide view angle as taught by Harada et al. (col. 1 lines 10-12, lines 30-36).

2. Claims 34-37 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6344883B2) as applied to claims 34 and 42 in view of Hasegawa et al. (US5499128A).

Yamada et al. fail to disclose forming the columnar spacer is normal to the device and has a diameter increasing toward the counter-electrode opposing the pixel electrode; wherein at least one columnar spacer having a side surface that is slanted or inclined as cited in claims 34-37 and 45.

Hasegawa et al. teach (Figs. 7-13) forming the columnar spacer is normal to the device and has a diameter increasing toward the counter-electrode opposing the pixel electrode.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain alignment active-matrix liquid crystal display device as Yamada et al. disclosed with forming the columnar spacer is normal to the device and has a diameter increasing toward the counter-electrode opposing the pixel electrode for improving the quality of the displayed image as taught by Hasegawa et al. (col. 3 lines 4-6).

Art Unit: 2871

3. Claims 35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6344883B2) as applied to claims 34 and 42 in view of Shanks (US44342030).

Yamada et al. fail to disclose the features in claims 35 and 38.

Shanks teaches that the side surface of said at least one spacer is adapted to pre-align molecules of the liquid crystal surrounding each of the spacers centering thereat and the side surface is adapted to pre-align molecules of the liquid crystal substantially parallel to the sidewall for high contract display.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain alignment active-matrix liquid crystal display device as Yamada et al. disclosed, wherein the side surface of said at least one spacer is adapted to pre-align molecules of the liquid crystal surrounding each of the spacers centering thereat and the side surface is adapted to pre-align molecules of the liquid crystal substantially parallel to the sidewall for high contract and bright display as taught by Shanks (col. 2 lines 35-39).

Allowable Subject Matter

Claims 4, 15 and 21-22 allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 4, 15 and 21 are allowed since there is no prior art before August 28, 1998 (Foreign Priority) teaches an active-matrix liquid crystal display device comprising

- said orientation layer on the pixel electrode formed into a curved surface and oriented molecules of the liquid crystal aligned in a direction normal to the curved surface of said orientation layer,
- at least one columnar spacer having a diameter varying along its axis is provided between the two opposing plates for regulating a panel gap therebetween, said at least one columnar spacer disposed approximately at a center of a pixel.

Claim 22 is allowed since it depends on the allowed claim 21.

Claims 39 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 39 is allowable since there is no prior art before August 28, 1998 (Foreign Priority) teaches the orientation layer formed into a curved or slanted surface so as to orient molecules of the liquid crystal in a defined direction normal to the curved or slanted surface of said orientation layer wherein the at least one columnar spacer disposed approximately at center of the pixel.

Claim 47 is allowable since there is no prior art before August 28, 1998 (Foreign Priority) teaches the orientation and pixel electrode are convex-shaped wherein the at least one columnar spacer disposed approximately at center of the pixel.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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ANDREW SCHECHTER
PRIMARY EXAMINER